

### **REMARKS**

Claims 1-8, 10-33 are pending in the above-identified application upon entry of the present amendments. Claim 9 was previously canceled. Claims 1, 2, 4, 10, 17-21, and 32-33 claims have been amended in the present response and Claims 3, 7-9, 12-16, 23-24, 27-30 have been canceled in this response. Claims 5-6, 11, 22, 25-26, 31 were previously presented. No new matter has been added by way of the present amendments.

Support for the amendments of Claims 1, 4, 5, 12-24 and 26-33 are found through out the instant Application. Specifically, support for the amendment made to Claim 1 is found in Claim 3, and on page 6, lines 14-16, both as originally filed. Support for the amendment made to Claim 2 is found in Claim 8, on page 12, lines 4-9, and on page 17, lines 1-13. Support for the amendment made to Claim 17 is found in Claim 14 as originally filed. Claims 18-20 were amended for proper Claim dependency. Support for the amendment made to Claim 21 is found in Claim 14 as originally filed. Support for the amendment made to Claim 32 is found in Claim 3 and on page 20, lines 29-31 as originally filed. Support for the amendment made to Claim 33 is found on page 21, lines 1-6 of the specification as originally filed.

#### **I. Rejection of Claims 1, 4, 5, 12-24 and 26-33 Under 35 U.S.C. § 102(f) and (g)**

Claims 1, 4, 5, 12-24 and 26-33 are rejected under 35 U.S.C. 102 (f) and (g) as being allegedly anticipated by Sorge et al (U.S. Patent 5,556,772). However, as detailed below, Sorge et al does not disclose all of the elements of the present invention and therefore, the rejection should be withdrawn.

The Office alleges that Sorge teaches a formulation of thermostable DNA polymerase comprising a first DNA polymerase and a second DNA polymerase, wherein the ratio of the exo- polymerase to the exo+ polymerase is greater than 1 to 1. The Office indicates that Table 7 of the Sorge 5,556,772 reference, illustrates that Sorge teaches a ratio of the exo- polymerase to the exo+ polymerase as being greater than 1 to 1. However, Table 7 of the Sorge

reference, refers only to ratios of the exo-polymerase to the exo+ polymerase in ratios up to 9:1, and no higher. Nowhere in the reference does Sorge recite polymerase ratios greater than 9:1.

For a valid 102(f) and 102(g) reference, the reference must recite the same invention as the instant Application. The Sorge reference lacks support for ratios greater than 9:1, and because polymerase ratios of 1:100 and 1:600 are found in the present Application, the inventions are not the same. Support for ratios of the exo- polymerase to the exo+ polymerase greater than 10:1 can be found in the present Application as well as the parent application from which priority is claimed (as detailed in the preceding paragraphs).

Accordingly, because the invention of the instant application, as currently amended, is not the same invention as that found in the Sorge reference, a proper 102(f) and 102(g) rejection cannot be made using this reference. The Applicant therefore respectfully requests that the rejection of Claims 1, 4, 5, 12-24 and 26-33 under 35 U.S.C. § 102(f) and (g) be withdrawn.

## **II. Rejection of Claims 3, 6-8 and 10 Under 35 U.S.C. § 103 over Sorge et al (U.S. Patent 5,556,772) in view of Barnes et al (WO94/26766)**

Claims 3, 6-8 and 10 are currently rejected under 35 U.S.C. § 103 over Sorge et al in view of Barnes et al. Applicants have canceled Claims 3, 7-9, 12-16, 23-24, and 27-30. However, as currently amended in the present response, a case of *prima facie* obviousness cannot and has not been made using the Sorge reference for the reasons discussed below.

According to the Office, Sorge teaches a formulation of thermostable DNA polymerase comprising a first DNA polymerase, and a second DNA polymerase, one of which lacks 3'5' exonuclease activity and one of which possesses 3'5' exonuclease activity, wherein the ratio of the exo- polymerase to the exo+ polymerase is greater than 1 to 1. However, the Applicant points out, that the Office is in error in that Sorge does not disclose ratios of these polymerases greater than 9:1. In fact, the Office points to "column 14, especially table 7, where different ratios are shown by Sorge" as support of the alleged 1:1 ratio,

yet, as shown in table 7 of the Sorge reference, no ratio exceeds 9:1, and for this reason, *inter alia*, the Sorge reference cannot be used as a valid 103 reference.

In fact, the Sorge reference actually teaches away from using various ratios of DNA polymerases (see page 14, lines 49 to 54 of Sorge US 5,556,772). In that passage, it is stated: "Template concentration can affect the amplification efficiency and may explain there is **little difference in the amount of PCR product in the different samples when the ratio of DNA polymerases is varied.** "

In addition to different ratios being taught between the Sorge reference and the instant Application, in the present invention, it is specified that the nucleic acid sequence to be amplified is a nucleic acid sequence is 6 kb or more in length. Nowhere in Sorge do the Applicants disclose a specified length of the nucleic acid sequence to be amplified. In Claims 17-19 of the present Application, the nucleic acid sequence to be amplified is specified as 6 kb or more in length, 8.4 kb or more in length, and 15 kb or more in length. Sorge does not disclose the length of the nucleic acid sequence to be amplified as the inventors have done in the present invention.

Further, in Claims 21 of the present invention, it is specified that denaturing has a duration of less than 20 seconds, and in Claim 22, it is specified that the duration is less than 5 seconds. Nowhere in the Sorge reference is a time specified of 20 seconds or less. Therefore, the current invention is not anticipated by the Sorge reference.

The Office has also referenced Barnes et al (WO94/26766) in the present 103 rejection. However, Barnes et al cannot be used as a proper 103 reference and must be thrown out as a 103 reference against the present invention. This is because the earliest priority date of the Barnes '766 reference is February 22, 1994 and the earliest priority date of the present Application is February 19, 1993. Therefore, the Barnes reference is not prior art and cannot be used in a 103 rejection. The present invention is a continuation-in-part of the early parent filing which is now U.S. Patent No. 5,436,149. The Applicant has confirmed that each of the claims in the present invention, as currently amended, can find

support in the parent Application having a priority date of February 19, 1993. For instance, support for Claim 1 of the present invention is found in Claim 6 of the parent application (Patent 5,436,149). Support for Claim 2 in the present application is found in Figure 4A and Figure 4B, Figure 8, and paragraphs 3 and 4 of the Description of the Preferred Embodiments of parent case '149. Support for Claim 4 is found in Example 6 of reference '149. Support for Claim 5 is found in Claim 8 of the parent case as originally filed. Claim 6 of the present invention finds support in the parent application in Claim 6. Claim 10 of the present invention finds support in Claim 6 of the parent application. Support for Claim 11 of the present application is found in the abstract of the parent application. Support for Claim 17 is found in Figures 6A, 6B, and 6C of the parent application. Support for Claims 18 and 19 of the present application is found in Figure 7 of the parent application, where, for instance, 8.4, 12.5, 15, and 18 kbs are specified. Claim 20 of the present application is supported by Figures 6A-6C of the parent application. Support for Claims 21-22 of the present application are supported by Example 6 of the parent application, and paragraph 4 of the Description of the Preferred Embodiment section of the parent application. Support for Claim 25 is found in Example 6 and Claim 8 of the parent application. Support for Claim 26 is found in Claim 1 of the parent case and Claims 32 and 33 find support in Claim 6 of the parent application. Thus, each claim of the present invention finds support in the parent application having a filing date and a priority date of February 19, 1993, which is nearly 1 year before the cited reference of Barnes et al.

For the reasons discussed, the Applicant respectfully points out that a case of *prima facie* obviousness has not been made. To establish obviousness of a claim, the prior art must disclose or suggest each element of the claim; there must be some reason that would have prompted one of ordinary skill in the art to combine the elements and/or modify a reference so as to reach the requirements of the claim; and there must have been a reasonable expectation of success of the combination and/or modification. MPEP § 2143; KSR Int'l Co. v.

Teleflex Inc., 550 U.S. \_\_\_, Slip Op No. 04-1350 (April 30, 2007). The Office must show all three of these elements to establish a case of *prima facie* obviousness.

In this instance, not all three factors have been demonstrated because the references cited by the Office in this 103 rejection, do not disclose or suggest each element of the claimed invention. Not only are the ratios of the DNA polymerase lacking 3'-exonuclease activity and the thermostable DNA polymerase exhibiting 3'-exonuclease activity, different in the present invention than they are in the cited reference, but the length of the nucleic acid sequences to be amplified is different, as well as the time required for denaturing the nucleic acid sequence.

Accordingly, because none of the references cited by the Office disclose or suggest each and every element of the claimed invention, and because there is no showing in any of these references of a reason that would have prompted one of ordinary skill in the art to modify a reference in order to reach the requirements of the claims of the instant application, rejection of these claims under 35 U.S.C. §103 over Sorge in view of Barnes, is improper and should be withdrawn.

**III. Rejection of Claims 11 and 25 Under 35 U.S.C. § 103(a) over Sorge et al (U.S. Patent 5,556,772) in view of Carballeira et al (WO94/26766).**

Claims 11 and 25 are currently rejected under 35 U.S.C. § 103 over Sorge et al in view of Carballeira et al. Applicants have canceled Claims 3, 7-9, 12-16, 23-24, and 27-30. However, a case of *prima facie* obviousness cannot be made using this reference for reasons stated in the preceding paragraphs and for those reasons stated below.

The Office states that Sorge teaches the limitations of claims 1, 4, 5, 12-24 and 26-33 but does not teach the use of thermus thermophilus DNA polymerase. According to the Office, Carballiera teaches Thermus thermophilus DNA polymerase.

As discussed above regarding Sorge, the ratios taught in the present invention, as well as the length of the nucleic acid sequence to be amplified, and

the time required for nucleic acid denaturing, is not taught by the Carballiera reference.


Accordingly, because the Carballiera reference does not disclose or suggest each and every element of the claimed invention, and because there is no showing in the Carballiera reference of a reason that would have prompted one of ordinary skill in the art to modify a reference in order to reach the requirements of the claims of the instant application, rejection of these claims under 35 U.S.C. §103 over Sorge in view of Carballiera, is improper and should be withdrawn.

## CONCLUSION

For the foregoing reasons, Applicant respectfully requests reconsideration and withdrawal of rejections of the claims. It is believed that the claims as currently presented are in a condition for allowance and such favorable action is respectfully requested. If any questions arise or if any issues remain to be resolved, it is requested that the Examiner contact the undersigned attorney.

Respectfully submitted,

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